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MOSER IP LAW GROUP / SARNOFF CORPORATION
1040 BROAD STREET
2ND FLOOR
SHREWSBURY, NJ 07702

| EXAMINER |
|---|
| RAO, ANAND SHASHIKANT |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2613 | |

DATE MAILED: 02/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 10/779,444 | Applicant(s) ARPA ET AL. | |
|---|---|---|---|
| | Examiner Andy S. Rao | Art Unit 2613 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *1/18/06*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. Applicant's arguments, see as in the Interview Summary, filed on 1/18/06, with respect to the amended claims 1-26 of 5/26/05 have been fully considered and are persuasive. The final rejection of 8/12/05 has been withdrawn.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Diner in view of Jain et al., (hereinafter referred to as "Jain").

Diner discloses a method for dynamic sensor placement (Diner: column 10, lines 60-68; column 11, lines 1-3), comprising: positioning at least one sensory device (Diner: column 4, lines 33-38) in a scene (Diner: column 3, lines 13-25); rendering in image of at least part of a coverage area of said at least one sensory device within the scene (Diner: column 6, lines 35-40), said coverage area being derived in accordance with sensor parameters associated with said at least one sensory device (Diner: column 6, lines 40-53); and said rendering of said image being derived for a view point in said scene that is different from the positioning of said sensory device (Diner; column 8, lines 10-20), as in claim 1. However, Diner fails to specifically disclose using a 3-D site model supported in a computer as the basis for the scene, even though it does disclose

a graphic capability (Diner: column 9, lines 19-30). Jain discloses using a video database (Jain: column 17, lines 45-55) for building a 3-D environmental model (Jain: column 15, lines 65-67; column 16, lines 1-10) of a surveillance site (Jain: column 26, lines 50-65) in a computer (Jain: column 30, lines 23-55) in order to accurately render a virtual image from a virtual camera (Jain: column 15, lines 65-67; column 16, lines 1-10). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Jain scene generating using a 3-D environmental models into the Diner placement method in order to accurately generate virtual images for virtual camera viewpoints. The Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has all of the features of claim 1.

Regarding claim 2, the wherein said rendering step renders the coverage area covered by said sensor in accordance with said sensor parameters with objects in the 3-D site model being given a texture that differentiates the coverage area from areas in the scene that are not in said coverage area (Diner: column 10, lines 5-20), as in the claim.

Regarding claim 3, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has receiving input from a device representing an adjustment to at least one of the site model, sensory parameters, and view point for viewing said at least one sensory device (Diner: column 6, lines 55-65), and rendering part of said coverage area of said sensory device based on an adjustment or on values changed thereby (Diner: column 7, lines 30-45), as in the claim.

Regarding claim 4, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, wherein at least one sensory device is associated with sensor parameters (Diner: column 7, lines 20-45) that define relative to said 3-D site model

characteristics (Jain: column 34, lines 25-40) modeling a sensor (Jain: column 23, lines 25-57) selected from the consisting of a camera, a motion sensor, an ultrasonic sensor, and an infrared sensor (Jain: column 5, lines 60-67; column 6, lines 1-10), as in the claim.

Regarding claim 5, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has wherein said positioning occurs automatically in accordance with at least one of a minimization of an occluded area, a maximization of the coverage area, and said sensory (Jain: column 33, lines 40-67), as in the claim.

Regarding claim 6, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has determining whether an occlusion exists within an area covered by said sensory device (Jain: column 33, lines 40-67), as in the claim.

Diner discloses a method for dynamic sensor placement (Diner: column 10, lines 60-68; column 11, lines 1-3), comprising: selecting (Diner: column 4, lines 33-38) a site (Diner: column 3, lines 13-25); selecting a sensor for placement into said site (Diner: column 6, lines 40-53); rendering said sensor within a scene of said site (Diner: column 6, lines 35-40) in accordance with sensor parameters associated with said at least one sensory device (Diner: column 6, lines 40-53); said rendering of said image being derived for a view point in said scene that is different from the positioning of said sensory device (Diner; column 8, lines 10-20), and including at least a part of the coverage area for said sensor in accordance with the site and sensor parameters and a portion of the site model that is not in said coverage (Diner: column 8, lines 20-55), as in claim 7. However, Diner fails to specifically disclose using a 3-D site model supported in a computer as the basis for the scene, even though it does disclose a graphic capability (Diner: column 9, lines 19-30). Jain discloses using a video database (Jain: column 17, lines 45-55) for building a

3-D environmental model (Jain: column 15, lines 65-67; column 16, lines 1-10) of a surveillance site (Jain: column 26, lines 50-65) in a computer (Jain: column 30, lines 23-55) in order to accurately render a virtual image from a virtual camera (Jain: column 15, lines 65-67; column 16, lines 1-10). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Jain scene generating using a 3-D environmental models into the Diner placement method in order to accurately generate virtual images for virtual camera viewpoints. The Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has all of the features of claim 7.

Regarding claim 8, the wherein said rendering step renders the coverage area covered by said sensor in accordance with said sensor parameters with objects in the 3-D site model being given a texture that differentiates the coverage area from areas in the scene that are not in said coverage area (Diner: column 10, lines 5-20), as in the claim.

Regarding claim 9, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has selecting a viewpoint for viewing said scene and using said viewpoint as the point of view in rendering said scene (Diner: column 7, lines 30-45), as in the claim.

Regarding 10, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has a graphical user interface (Diner: column 5, lines 15-25), as in the claim.

Regarding claim 11, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has wherein said positioning occurs automatically

in accordance with at least one of a minimization of an occluded area, a maximization of the coverage area, and a sensor parameter (Jain: column 33, lines 40-67), as in the claim.

Regarding claim 12, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models, has determining whether an occlusion exists within an area covered by said sensory device (Jain: column 33, lines 40-67), as in the claim.

Diner discloses a method comprising of a plurality of instructions (Diner: column 10, lines 60-68; column 11, lines 1-3), the plurality of instructions including instructions which, when executed by a processor cause the processor to perform the steps comprising of: positioning at least one sensory device (Diner: column 4, lines 33-38) in a scene (Diner: column 3, lines 13-25); rendering dynamically images of said sensor in the scene (Diner: column 6, lines 35-40) in accordance with sensor parameters associated with said at least one sensor (Diner: column 6, lines 40-53), wherein said rendering renders an area covered by said sensor in accordance with said sensor parameters (Diner: column 9, lines 1-23), wherein the images being are from one or more viewpoints none of which are that of the sensor (Diner; column 8, lines 10-20), as in claim 13. However, Diner fails to specifically disclose using a 3-D site model as the basis for the scene with the method implemented on a computer readable medium, even though it does disclose a graphic capability (Diner: column 9, lines 19-30). Jain discloses using a video database (Jain: column 17, lines 45-55) for building a 3-D environmental model (Jain: column 15, lines 65-67; column 16, lines 1-10) of a surveillance site (Jain: column 26, lines 50-65) in a computer (Jain: column 30, lines 23-55) and computer readable medium (Jain: column 41, lines 10-15) in order to accurately render a virtual image from a virtual camera (Jain: column 15, lines 65-67; column 16, lines 1-10). Accordingly, given this teaching, it would have obvious for one

of ordinary skill in the art to incorporate the Jain scene generating using a 3-D environmental models into the Diner placement method in order to accurately generate virtual images for virtual camera viewpoints. The Diner placement method, now incorporating the Jain scene generation using 3-D environmental models and implemented on a computer readable medium, has all of the features of claim 13.

Regarding claim 14, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models and implemented on a computer readable medium, has selecting a viewpoint for viewing said scene and using said viewpoint as the point of view in rendering said scene (Diner: column 7, lines 30-45), as in the claim.

Regarding claim 15, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models and implemented on a computer readable medium, has a graphical user interface (Diner: column 5, lines 15-25), as in the claim.

Regarding claim 16, the Diner placement method, now incorporating the Jain scene generation using 3-D environmental models and implemented on a computer readable medium, has wherein said positioning occurs automatically in accordance with at least one of a minimization of an occluded area, a maximization of the coverage area, and a sensor parameter (Jain: column 33, lines 40-67), as in the claim.

Diner discloses an apparatus for dynamic sensor placement (Diner: figure 1), comprising: means for positioning at least one sensory device (Diner: column 4, lines 33-38) in a scene (Diner: column 3, lines 13-25); means for rendering dynamically images of said sensor in the scene (Diner: column 6, lines 35-40) in accordance with sensor parameters associated with said at least one sensor (Diner: column 6, lines 40-53), wherein said rendering renders an area

covered by said sensor in accordance with said sensor parameters (Diner: column 9, lines 1-23), wherein the images being are from one or more viewpoints none of which are that of the sensor (Diner; column 8, lines 10-20), as in claim 17. However, Diner fails to specifically disclose using a 3-D site model as the basis for the scene, even though it does disclose a graphic capability (Diner: column 9, lines 19-30). Jain discloses using a video database (Jain: column 17, lines 45-55) for building a 3-D environmental model (Jain: column 15, lines 65-67; column 16, lines 1-10) of a surveillance site (Jain: column 26, lines 50-65) in a computer (Jain: column 30, lines 23-55) and computer readable medium (Jain: column 41, lines 10-15) in order to accurately render a virtual image from a virtual camera (Jain: column 15, lines 65-67; column 16, lines 1-10). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Jain scene generating using a 3-D environmental models into the Diner placement method in order to accurately generate virtual images for virtual camera viewpoints. The Diner placement apparatus, now incorporating the Jain scene generation means using 3-D environmental models, has all of the features of claim 17.

Regarding claim 18, the Diner placement apparatus, now incorporating the Jain scene generation means using 3-D environmental models, has means for selecting at least one of said 3-D models, said sensory parameters, and one of said viewpoints for viewing said at least one sensor (Diner: column 7, lines 30-45), as in the claim.

Regarding claim 19, the Diner placement apparatus, now incorporating the Jain scene generation means using 3-D environmental models, has means for determining whether an occlusion exists within an area covered by said sensor (Jain: column 33, lines 40-67), as in the claim.

Diner discloses a method (Diner: column 10, lines 60-68; column 11, lines 1-3) for placing a plurality of surveillance cameras in a site (Diner: column 10, lines 35-45), said method comprising: providing scene data of the site (Diner: column 3, lines 13-25); providing to position data defining discrete positions for each of a plurality of cameras (Diner: column 5, lines 55-65), each camera being associated with data defining viewing parameters defining coverage thereof (Diner: column 6, lines 35-40); rendering an image of the site from a viewpoint (Diner: column 6, liens 40-53), said image showing at least a part of a coverage area determined from the position data for at least one camera and the viewing parameters thereof (Diner: column 8, lines 10-20); and displaying said image so as to be viewed by a user (Diner: column 9, lines 1-20), as in claim 20. However, Diner fails to specifically disclose using a 3-D site model supported in a computer as the basis for the scene, even though it does disclose a graphic capability (Diner: column 9, lines 19-30). Jain discloses using a video database (Jain: column 17, lines 45-55) for building a 3-D environmental model (Jain: column 15, lines 65-67; column 16, lines 1-10) of a surveillance site (Jain: column 26, lines 50-65) in a computer (Jain: column 30, lines 23-55) in order to accurately render a virtual image from a virtual camera (Jain: column 15, lines 65-67; column 16, lines 1-10). Accordingly, given this teaching, it would have obvious for one of ordinary skill in the art to incorporate the Jain scene generating using a 3-D environmental models into the Diner surveillance method in order to accurately generate virtual images for virtual camera viewpoints. The Diner surveillance method, now incorporating the Jain scene generation using 3-D environmental models, has all of the features of claim 20.

Regarding claim 20, the Diner surveillance method, now incorporating the Jain scene generation using 3-D environmental models, has receiving input to said computer and based

thereon changing the position data parameters for at least one of said cameras to adjusted position data reflecting an adjusted position of said camera in the 3-D site model (Diner: column 55-65); and rendering a second image of the site from the viewpoint that is based on said 3-D model and that shows at least a part of a coverage area in said 3-D model determined using the adjusted position data for said camera and the viewing parameters thereof (Diner: column 5, lines 25-40); and displaying said second image (Diner: column 9, lines 1-23), as in the claim.

Regarding claim 22, the Diner surveillance method, now incorporating the Jain scene generation using 3-D environmental models, has receiving input to said computer indicative of an adjustment in the viewpoint to a second viewpoint (Diner: column 6, lines 55-65); and rendering a second image of the site from the second viewpoint based on said 3-D model and showing at least a part of the coverage area (Diner: column 6, liens 30-40), as in the claim.

Regarding claims 23-24, the Diner surveillance method, now incorporating the Jain scene generation using 3-D environmental models, has said rendering the coverage are is marked in the image with a texture applied to surfaces in the 3-D model in said coverage area (Diner: column 6, lines 30-45), as in the claims.

Regarding claim 25, the Diner surveillance method, now incorporating the Jain scene generation using 3-D environmental models, has wherein the computer is further provided with sensor position data defining a position of a sensor in said 3-D model (Diner: column 4, lines 40-55), and sensor parameters indicative of coverage thereof, said image being rendered to show at least part of a sensor coverage area defined by said sensor position and said sensor parameters (Diner: column 6, lines 30-40), as in the claim.

Regarding claim 26, the Diner surveillance method, now incorporating the Jain scene generation using 3-D environmental models, has the rendering of said image includes ray tracing between the viewpoint and a point on a surface in the 3-D model and ray tracing between the point on the surface in the 3-D model and each of the cameras (Jain: column 32, lines 60-65), said point being displayed as in the coverage area when said ray tracings do not encounter any occlusion in the 3-D model been said point on said surface and at least one of the cameras, and being displayed as outside the coverage area when there is an occlusion between the point and all of said cameras (Jain: column 33, lines 40-67), as in the claim.

### *Conclusion*

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Szeliski discloses a deghosting method and apparatus of constructing image mosaics. Robotham discloses an iterative three-dimensional process for creating finished media content.

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andy S. Rao whose telephone number is (571)-272-7337. The examiner can normally be reached on Monday-Friday 8 hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571)-272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Andy S. Rao
Primary Examiner
Art Unit 2613

ANDY RAO
PRIMARY EXAMINER

asr
February 1, 2006